REMARKS

This Preliminary Amendment is submitted concurrently with the RCE being filed. A one month extension of time is sought.

There exists some ambiguity among those skilled in the art about what is meant precisely by the term "two dimensional ion trap". On the one hand, it is generally clear that a "three dimensional ion trap" is a device whereby ions are trapped in three orthogonal directions (axes) due, at least in part, to the action of radio frequency (RF) electric fields in all three directions. On the other hand, a two dimensional ion guide is generally understood to be a device in which RF fields contain, or trap, ions in two orthogonal directions, that is, perpendicular to the axis of the ion guide, while allowing free ion motion along the third direction, that is, along the axis of the ion guide. Hence, such an ion guide is sometimes referred to as a "two dimensional ion trap", because, analogous to a three dimensional ion trap, ions are 'trapped' in two dimensions by the action of RF fields. This is explained in the 6,020,586 patent in col. 7, line 8-26. However, because ions are free to move into or spill out of the ion guide along the third dimension, that is, the ion guide axis, at the ion guide ends, such an ion guide, on its own, cannot be considered to be an effective ion trap, per se, in the sense of providing the capability of storing ions for any time period.

As taught in the present application, however, such an ion storage mode is achieved by providing a potential barrier due to a voltage applied to an exit lens at the ion guide exit, thereby preventing ions from leaving this end of ion guide, while relatively high gas flow/pressure, and/or a potential applied to an entrance end electrode, prevents ions from leaving at the entrance end. Hence, ions are 'trapped' along the ion guide axis, and, in combination with the RF fields trapping ions perpendicular to the ion guide axis, allows the ions to be stored within the ion guide. Nevertheless, given that RF fields are employed to trap ions in only two directions, such a device had also been referred to as a "two dimensional ion trap", now used in the more general sense of a device which actually traps ions in all directions for storage, rather than in only two directions in order to guide them along the third direction.

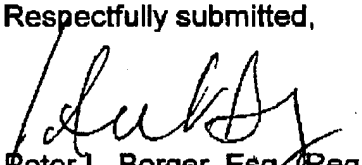
In any case, for a two dimensional multipole ion guide to function as an ion trap for ion storage, that is, to trap ions in all three dimensions, additional elements beyond the ion guide rods are required in order to prevent ions from spilling out the ends.

Examiner Nguyen had previously contended that: "... Whitehouse et al. (5,962,851) disclose a two-dimensional multipole ion guide that functions as a two-dimensional ion trap (see col. 3, lines 51-57; col. 5, line 67 to col 6, line 4; col. 10, lines 17-20; and col. 19, lines 34-37."

Claim 11 has been amended to include sufficient features that prevent ions from spilling out the ion guide ends and further eliminates reference to a two-dimensional ion trap. Claim 11 has been further amended to include structure to prevent ions from spilling out from the ion guide ends. Thus, the trap as claimed in claim 11 traps ions in all three dimensions which is not in the '851 patent.

In view of the above action and comments, an early notice of allowance is respectfully requested.

Respectfully submitted,



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